CLAIMS:

1. A sample target comprising, as a sample support surface, a surface which is used to support a sample in ionizing the sample on the basis of laser irradiation so as to perform mass spectrometry and which has a finely bumpy structure of an order ranging from nanometer to several dozen micrometer, wherein

a face of the sample support surface is coated with metal.

2. The sample target as set forth in claim 1, wherein the metal is at least either platinum (Pt) or gold (Au).

3. The sample target as set forth in claim 1 or 2, wherein the bumpy structure of the sample support surface is arranged so that a plurality of concave portions are regularly formed.

4. A sample target comprising, as a sample support surface, a surface which is used to support a sample in ionizing the sample on the basis of laser irradiation so as to perform mass spectrometry and which has a finely bumpy structure of an order ranging from nanometer to several dozen micrometer, wherein

the bumpy structure of the sample support surface is arranged so that a plurality of concave portions are regularly formed.

5. The sample target as set forth in claim 3 or 4, wherein an interval of the concave portions adjacent to each other is not less than 1nm and less than 30μm.

6. The sample target as set forth in any one of claims 3 to 5, wherein a width of each of the concave portions is not less

than 1nm and less than 30μm.

7. The sample target as set forth in any one of claims 3 to 6, wherein a depth of each of the concave portions is not less than 1nm and less than 30μm.

8. The sample target as set forth in any one of claims 3 to 7, wherein each of the concave portions is a trench or a hole.

9. The sample target as set forth in claim 8, wherein: when each of the concave portions is a trench, the concave portions are repeatedly disposed so that trenches in different directions intersect with each other.

10. The sample target as set forth in claim 8, wherein: when each of the concave portions is a hole, the hole has a cylindrical shape or a prismatic shape.

11. The sample target as set forth in any one of claims 1 to 10, wherein a material of at least the sample support surface of the sample target is a semiconductor.

12. The sample target as set forth in claim 11, wherein the semiconductor is silicon.

13. A method for producing a sample target including, as a sample support surface, a surface which is used to support a sample in ionizing the sample on the basis of laser irradiation so as to perform mass spectrometry and which has a finely bumpy structure of an order ranging from nanometer to several dozen micrometer,

said method comprising the step of coating a face of the

sample support surface with metal.

14. The method as set forth in claim 13, comprising the step of repeatedly disposing concave portions on a surface of a substrate in accordance with lithography so that an interval of the concave portions is not less than 1nm and less than 30μm and a width of each of the concave portions is less than 30μm, before performing the step of coating the face of the sample support surface with the metal, so as to form the sample support surface on the surface of the substrate.

15. A method for producing a sample target including, as a sample support surface, a surface which is used to support a sample in ionizing the sample on the basis of laser irradiation so as to perform mass spectrometry and which has a finely bumpy structure of an order ranging from nanometer to several dozen micrometer,

said method comprising the step of repeatedly disposing concave portions on a surface of a substrate in accordance with lithography so that an interval of the concave portions is not less than 1nm and less than 30μm and a width of each of the concave portions is less than 30μm, so as to form the sample support surface on the surface of the substrate.

16. The method as set forth in claim 14 or 15, wherein the concave portions are formed by using an electron beam drawing apparatus as the lithography.

17. A mass spectrometer comprising the sample target as set forth in any one of claims 1 to 12.

18. The mass spectrometer as set forth in claim 17,

wherein the mass spectrometer is a laser desorption ionization mass spectrometer which ionizes the sample to be measured by irradiating laser to the sample so as to measure a molecular weight of the sample.